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E1G GLJ G700 G791

(56) Documents Cited  
GB 2270333 A GB 2254094 A GB 2215450 A  
GB 0930830 A US 5349346 A

(58) Field of Search  
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(54) Abstract Title  
**Illuminated warning triangle**

(57) A warning triangle has a front member 1 to which luminance intensifying means 2 are attached. A middle circuit board 31 carries light-emitting diodes 3, and a back member 4 has a battery compartment 41. The light-emitting diodes 3 can be continuously or intermittently illuminated, for example, by batteries 44 in the battery compartment, when a switch 43 is switched ON. The warning triangle can also be powered from the cigarette lighter of a vehicle by way of a power supply connection 45. As well as being illuminable, the front panel 1 also has reflective strips 11 to reflect external light. The luminance intensifying means 2 intensify the light emitted by the light-emitting diodes 3 to provide both passive and positive warning signals.

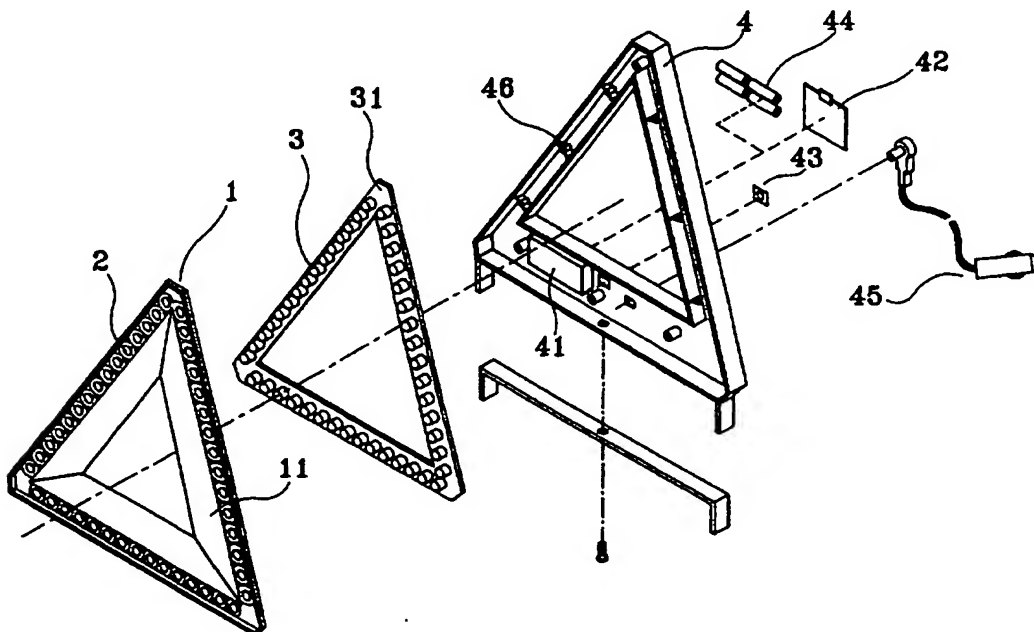


FIG.1

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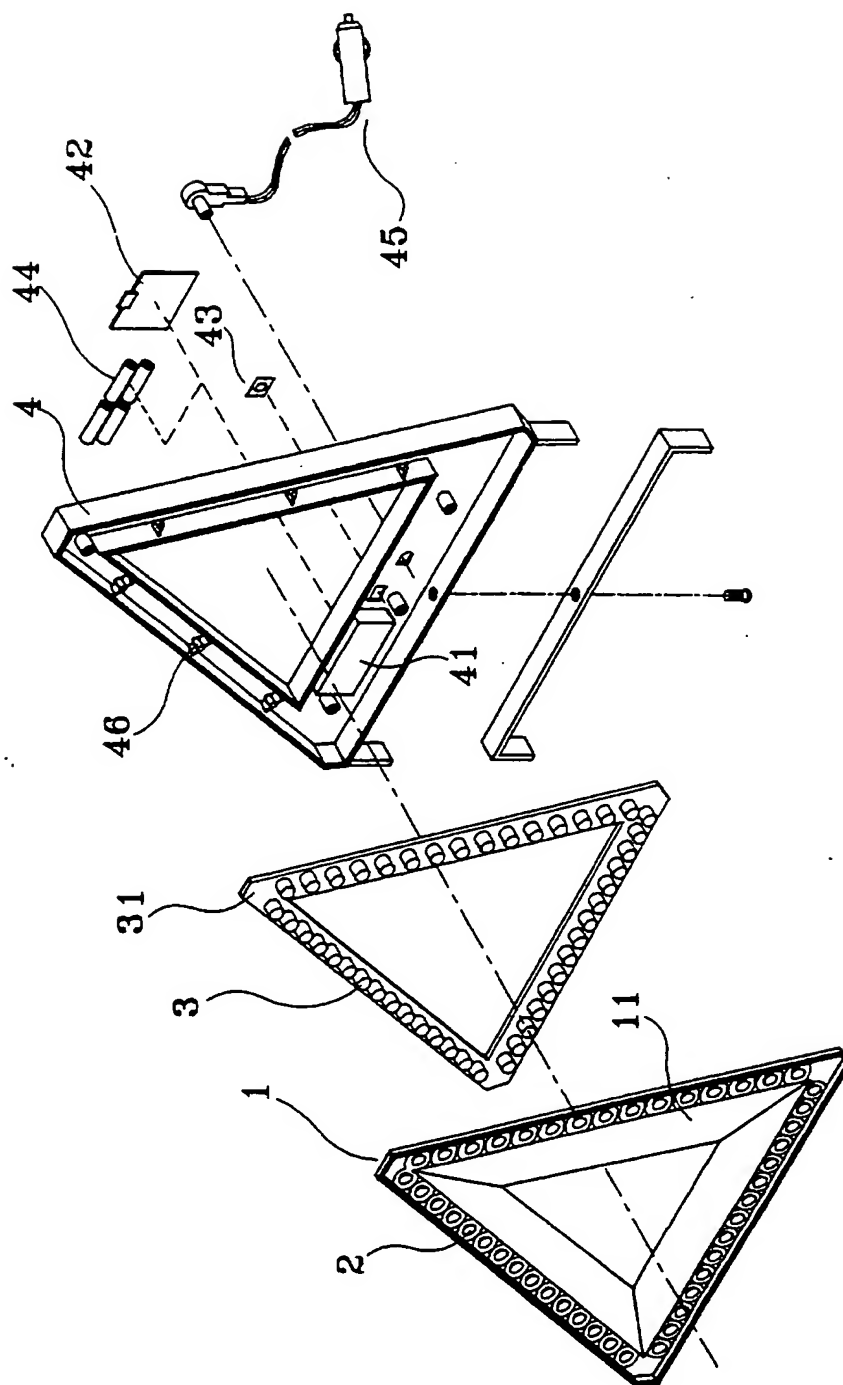


FIG.1

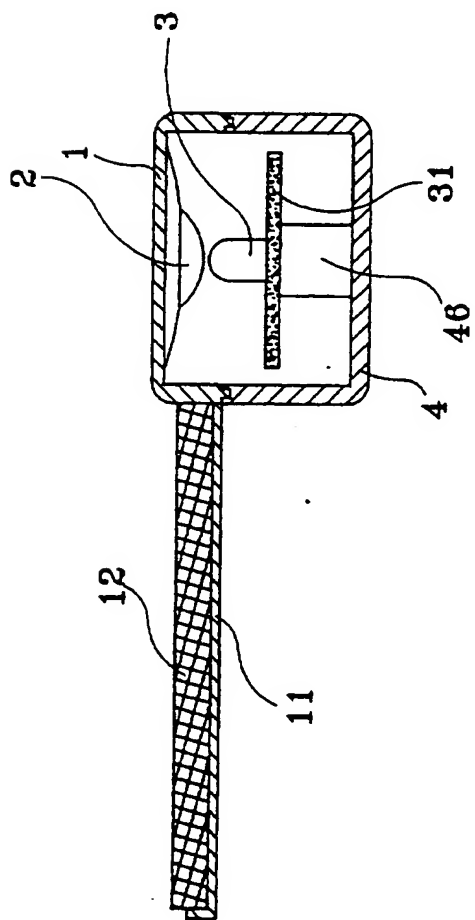


FIG. 2

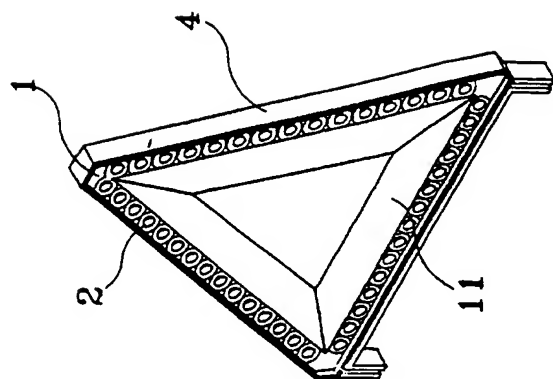


FIG. 3

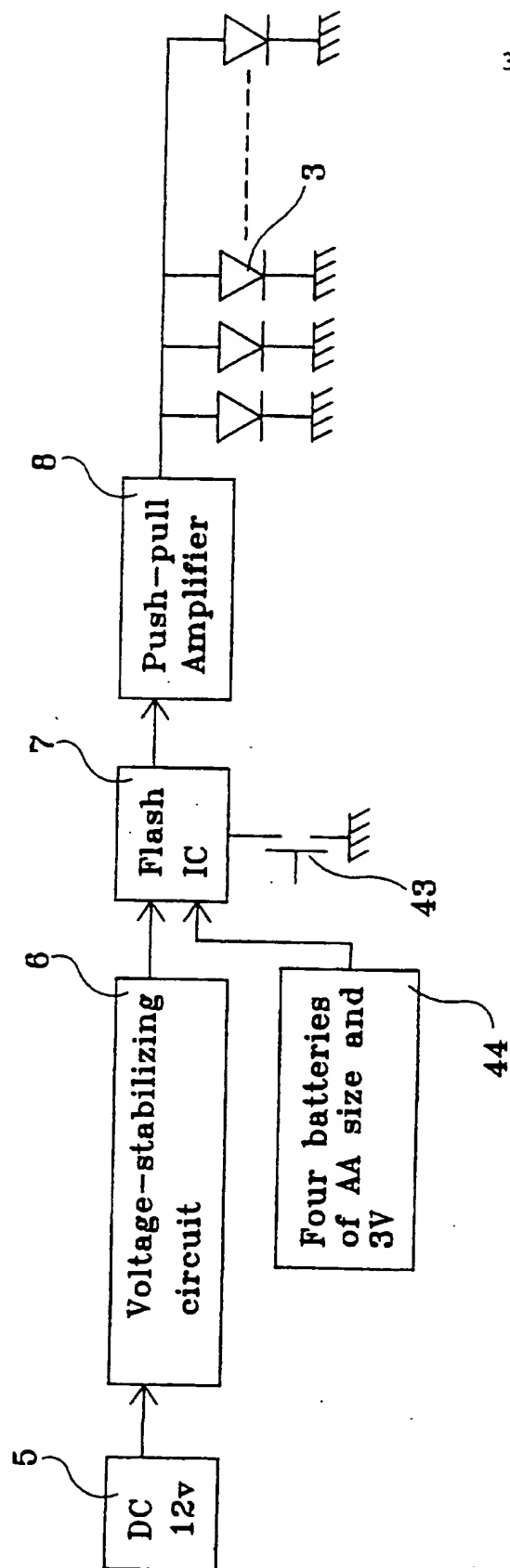


FIG.4

## A WARNING SIGN

## BACKGROUND OF THE INVENTION

## 5 1. Field of the Invention

The present invention relates to a warning sign mainly including a front member with luminance intensifying means, a middle member with light-emitting diodes, and a back  
10 member provided with switch, batteries, and power-supply plug.

## 2. Description of the Prior Art

15 A conventional warning sign is usually a triangle consisting of three reflective strips. Such conventional warning sign has the following disadvantages:

a) The warning sign has little reflective effect when there  
20 is not or only a weak light source. A warning sign without reflective effect positioned in front of or behind a vehicle or a road construction site will only increase the chances of accidents.

25 b) The warning sign itself is not a light-emitting means and can only passively reflect light from an external light source. A vehicle running at high speed may not be timely warned by the reflective warning sign and fiercely collides with a broken-down vehicle in front of the warning sign.

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c) The warning sign covered by dust shall have poor reflectivity.

It is therefore tried by the inventor to develop a warning sign which provides improved functions than the conventional warning sign.

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#### SUMMARY OF THE INVENTION

A primary object of the present invention is to provide an improved warning sign which can both emit and reflect light.

10 Another object of the present invention is to provide an improved warning sign which emits an intensified light and is therefore safer and more convenient in use.

15 A further object of the present invention is to provide an improved warning sign having a switch with which the warning sign can be powered either by battery or via a cigarette igniter on a car.

20 The warning sign according to the present invention mainly includes a front member provided with luminance intensifying means and reflective parts, a middle member provided with light-emitting diodes, and a back member provided with a stand, a switch, a power-supply plug, and a battery compartment. The middle member is actually a circuit board  
25 including light-emitting diodes, forming a light source of the warning sign to produce flashes. The luminance intensifying means provided on the front member intensify the flashes produced by the light-emitting diodes on the middle member. The reflective parts of the front member are  
30 panels connected to an inner periphery of the front member and coated with reflective material. The switch provided on the back member at a lower portion thereof not only

functions as an ON/OFF switch but also as a means deciding the warning sign to be powered by batteries or via a cigarette igniter on a car.

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#### BRIEF DESCRIPTION OF THE DRAWINGS

The technical means, features and functions of the present invention can be best understood from the following detailed description of the preferred embodiment and the accompanying  
10 drawings, wherein

Fig. 1 is an exploded perspective of the present invention;

Fig. 2 is an assembled sectional view of the present  
15 invention;

Fig. 3 is an assembled perspective of the present invention;  
and

20 Fig. 4 is a block diagram showing the circuit of the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

25 Please refer to Fig. 1 in which an exploded perspective of the present invention is shown. The present invention relates to a warning sign which mainly includes a front member 1 having a plurality of luminance intensifying means 2 attached thereto, a middle member which is a circuit board  
30 31 having a plurality of light-emitting diodes 3 connected thereto, and a back member 4 provided at a lower portion with a battery compartment 41 for accommodating batteries 44

therein, a switch 43, and a power-supply plug 45. The front member 1 also has panels 11 provided to an inner periphery thereof. The panels 11 are coated with reflective material so as to reflect light from an external light source. The  
5 luminance intensifying means 2 intensify light emitted by the light-emitting diodes 3. That is, a small internal light source of the present invention can be efficiently intensified. The battery compartment 41 is usually removably covered by a cover 42, so that batteries 44 can be  
10 firmly positioned or replaced in the battery compartment 41. The warning sign of the present invention can be powered by the batteries 44 or by plugging the power-supply plug 45 into a cigarette igniter on a car to get required power supply to the light-emitting diodes 3 to produce flashes.  
15 The switch 43 functions not only as an ON/OFF switch but also as a means to select either the batteries 44 or the power-supply plug 45 as a power source of the light-emitting diodes 3.

20 Please refer to Figs. 2 and 3 in which an assembled sectional view and an assembled perspective of the present invention are shown. From the drawings, it can be seen that the circuit board 31 and the light-emitting diodes 3 are enclosed in a space defined by the assembled front member 1  
25 and back member 4. The circuit board 31 is fixedly attached to the back member 4 by means of a plurality of fixing means 46 provided in the back member 4. Each light-emitting diode 3 faces a luminance intensifying means 2, so that light emitted by the diodes 3 is intensified by the means 2 and  
30 emits out of the front member 1 to produce flashes as a warning signal. Panels 11 connected to an inner periphery of the front member 1 is coated with a layer of reflective



material 12, so that light from an external light source shining the warning sign of the present invention can be reflected as a warning signal. Thus, the warning sign of the present invention effectively functions even there is  
5 not an external light source.

Fig. 4 is a block diagram showing the circuit of the present invention. In the circuit of the present invention, there is a voltage-stabilizing circuit 6 supplied with a direct-  
10 current 5 of 12V. Power is further supplied to a flash IC 7 via the voltage-stabilizing circuit 6. Alternatively, the flash IC 7 can also be powered by four AA size batteries 44 supplying a direct-current of 3V. The flash IC 7 is provided with a switch 43 which is used to turn on or off  
15 the warning sign or to switch power supply between the batteries 44 and an external power source. And a push-pull amplifier circuit 8 is provided between the light-emitting diodes 3 and the flash IC 7.

20 With the above arrangements, the warning sign of the present invention eliminates the shortcomings existed in the conventional warning signs by providing both light-emitting means and light-reflective means. The warning sign of the present invention can emit light via the light-emitting  
25 means powered by batteries or an external power source, such as a cigarette igniter of a car, and can therefore, be used even there is not an external light source. The warning sign of the present invention is safer and more convenient in use than the conventional ones.

What is claimed is:

1. A warning sign capable of emitting and reflecting light, comprising a front member having a plurality of luminance intensifying means attached thereto, a middle member which  
5 is a circuit board having a plurality of light-emitting diodes connected thereto, and a back member being provided at a lower portion with a battery compartment for accommodating batteries therein, a switch, and a power-  
10 supply plug; said front member also having panels provided to an inner periphery thereof, said panels being coated with reflective material so as to reflect light from an external light source, said luminance intensifying means intensifying light emitted from said light-emitting diodes, said light-  
15 emitting diodes being powered either by said batteries or by plugging said power-supply plug into a cigarette igniter on a car, and said switch functioning as an ON/OFF switch.
2. A warning sign as claimed in claim 1, wherein said switch  
20 is used to select either said batteries or said power-supply plug as a power source of said light-emitting diodes for said light-emitting diodes to produce flashes.

3. A portable warning sign having a front, reflective surface, and illuminable means arranged to illuminate said front reflective surface, and means for coupling said illuminable means to a power source.
- 5 4. A portable warning sign as claimed in Claim 3, wherein said warning sign is configured as a warning triangle.
5. A portable warning sign as claimed in Claim 3 or Claim 4, wherein said warning sign is provided with a battery compartment for receiving batteries to  
10 form the power source.
6. A portable warning sign substantially as hereinbefore described with reference to the accompanying drawings.



Application No: GB 9706073.5  
Claims searched: 1-6

Examiner: Richard Jupp  
Date of search: 29 May 1997

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): E1G: JGL

Int Cl (Ed.6): E01F: 9/00, 9/011, 9/016

Other: Online: World Patents Index

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2270333 A (BOLAN TRADING INCORPORATED) whole document relevant	3-5
X	GB 2254094 A (JOHN WEST HOLMES) whole document relevant	3-5
X	GB 2215450 A (OU JIN INDUSTRIAL CO LTD) whole document relevant	3-5
X	GB 0930830 A (FREDERICK JOHN ALFRED GAYTON) whole document relevant	3-4
X	US 5349346 A (SHIN-CHYUAN WU) whole document relevant	3-5

X Document indicating lack of novelty or inventive step  
Y Document indicating lack of inventive step if combined  
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the filing date of this invention.  
E Patent document published on or after, but with priority date earlier  
than, the filing date of this application.